

# **DEChub 90 Ethernet Backplane Owners Manual**

Order Number EK-DEHUB-OM-001

**Digital Equipment Corporation**

**February, 1991**

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# Contents

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<b>About This Manual</b>	vii
<b>1 DEChub 90 Introduction</b>	
Features . . . . .	1-1
Description . . . . .	1-3
<b>2 Configuration</b>	
Site Considerations . . . . .	2-1
Configuration Rules . . . . .	2-2
Basic Configuration Rules . . . . .	2-2
DEChub 90 Configuration Rules . . . . .	2-2
Building Wiring . . . . .	2-4
Typical Configurations . . . . .	2-5
DEChub 90 Backplane with Terminal Servers . . . . .	2-7
Work Group with Ethernet Repeaters . . . . .	2-8
Configuration Errors . . . . .	2-13
Termination Configuration Errors . . . . .	2-13
Work Group Bridge Configuration Errors . . . . .	2-16
Repeater Configuration Errors . . . . .	2-18
<b>3 Work Group Communication Center Installation and Troubleshooting</b>	
Rack Mount Installation . . . . .	3-2
Solid Wall Installation . . . . .	3-5
Installation Using DEHUX Wall Mount Plate . . . . .	3-8
Wall Mount Installation . . . . .	3-8
Office Partition Mounting . . . . .	3-13

Patch Panel .....	3-13
Installing the Cover .....	3-14
Installing Work Group Units in the Backplane .....	3-16
Troubleshooting .....	3-19

## A Specifications and Parts List

Specifications .....	A-1
Mechanical .....	A-1
Electrical .....	A-2
Environmental .....	A-2
Parts Lists .....	A-3
DEChub 90 Backplane .....	A-3
DEHUX Wall Mount and Cover .....	A-3

## B Related Documentation

### Figures

1-1 DEChub 90 Backplane with Units Installed .....	1-2
1-2 The DEChub 90 Backplane .....	1-5
2-1 EIA/TIA-568 Standard Distribution Subsystem Architecture .	2-6
2-2 Typical Configuration with Eight DECservers in Backplane .	2-7
2-3 Work Group Configuration with DECservers and Work Group Bridge .....	2-9
2-4 Work Group Configuration Supporting Workstations and PCs	2-10
2-5 Work Group Configuration Supporting Workstations, PCs, Terminal Servers .....	2-11
2-6 Work Group Configuration with Two Backplanes .....	2-12
2-7 Backplane Improperly Terminated .....	2-14
2-8 Work Group with Backplane Installed in Middle of ThinWire Segment .....	2-15
2-9 Work Group Bridge Installed in Wrong Slot .....	2-16
2-10 Two Work Group Bridges Installed in a Single Backplane ...	2-17
2-11 Two Work Group Bridges Installed in Work Group .....	2-18
2-12 More Than Two Repeaters .....	2-19
3-1 Installing Rack Mount Brackets to Backplane .....	3-3

3-2	Installing the Backplane Power Supply . . . . .	3-4
3-3	Mounting DEChub 90 Backplane on a Solid Wall . . . . .	3-7
3-4	Wall Mount Plate . . . . .	3-9
3-5	Installing the Backplane on the Wall Mount Plate . . . . .	3-11
3-6	Installing the Cover . . . . .	3-15
3-7	Removing the Back Cover of a Work Group Unit . . . . .	3-17
3-8	Installing a Work Group Unit in the DEChub 90 Backplane .	3-18

## Tables

2-1	Basic Configuration Rules . . . . .	2-2
2-2	DEChub 90 Configuration Rules . . . . .	2-3
3-1	DEChub 90 Backplane Troubleshooting . . . . .	3-20



## About This Manual

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This guide gives an overview of the DEChub 90 Ethernet Backplane and describes how to configure, install, and troubleshoot the DEChub 90 Ethernet Backplane. This guide also gives the specifications and related documentation for the DEChub 90.

### Organization

This guides has three chapters and two appendices.

Chapter	Meaning
1	Provides an overview of the DEChub 90 backplane and the optional DEHUX wall mount plate.
2	Describes the configuration requirements including site considerations, configuration rules and building wiring. Typical configurations and configuration errors are also included.
3	Describes how install and troubleshoot the DEChub 90 backplane and the optional DEHUX wall mount plate and cover.
Appendix A	Describes the physical dimensions; environmental and electrical specifications; parts lists.
Appendix B	Provides related documentation and how to order that information.





# 1

## DEChub 90 Introduction

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The DEChub 90 Backplane and optional DEHUX wall mount plate and cover is a convenient way to wall or rack mount Digital's Work Group family of products. All of Digital's Work Group products share the same packaging and interconnect scheme. Each unit can be installed as a standalone unit connected to other units by ThinWire coax or installed in the DEChub 90 backplane. The DEChub 90 backplane with work group units installed becomes a work group hub that is an integral part of a structured wiring environment.

### Features

#### DEChub 90 Backplane

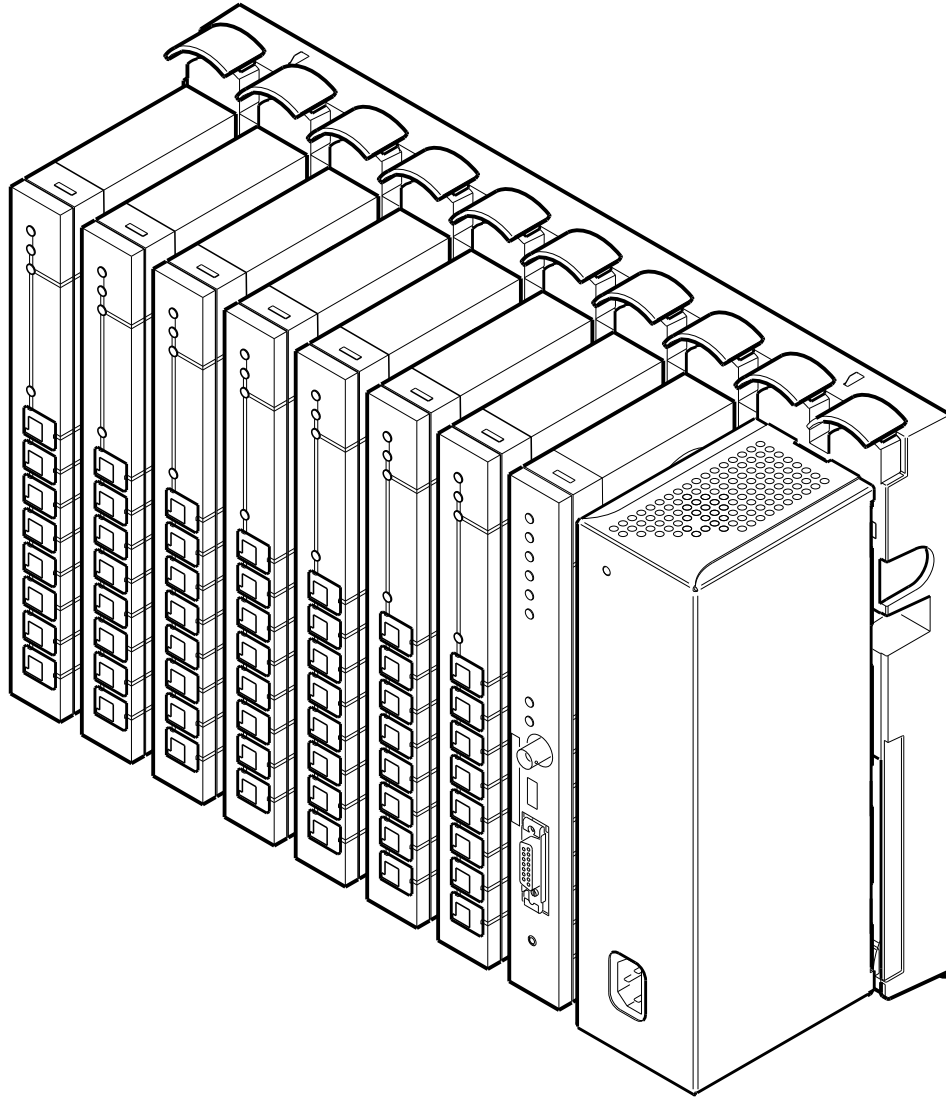
- Eight slot backplane for Digital's Work Group Family of Products
  - Provides ThinWire Ethernet connection and termination
  - Allows Hot-Swap of units
  - Serial management bus
- Single power supply for units installed in backplane
- Power supply auto-selects 120/240 Vac, 50/60 Hz
- Rack mountable with provided rack mount brackets
- Wall mountable on a solid wall

#### DEHUX Wall Mount and Cover

- Wall mount plate for DEChub 90 backplane
  - Provides 10½ inches of mounting space for patch panel options
  - Can be installed on:
    - Solid or hollow walls
    - Office partitions with provided hangers
- Cover for DEHUX wall mount plate
  - Provides protection for the backplane and patch panel
  - Provides security for the backplane and patch panel

Figure 1–1 shows the DEChub 90 backplane with eight Work Group units installed.

1-2 DEChub 90 Introduction



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**Figure 1-1 DEChub 90 Backplane with Units Installed**

# Description

The DEChub 90 backplane and Digital's Work Group family of products provide a network hub for a work group of up to 64 people.

Digital's Work Group Products	
Bridges	DECbridge 90 Work Group Bridge (DEWGB)
Repeaters	DECrepeater 90C ThinWire Multiport Repeater (DECMR)
	DECrepeater 90T Twisted-Pair Multiport Repeater (DETMR)
Servers	DECserver 90L Terminal Server (DSRVD)
Backplanes	DEChub 90 Ethernet Backplane (DEHUB)

The DEChub 90 backplane, Figure 1-2, provides mounting, power, and ThinWire Ethernet connections for up to eight Work Group family units plus the power supply. Work Group units may be installed in any mixture and order in the backplane with one exception. The DECbridge 90 or other Work Group unit requiring a +12 V supply must be installed in slots seven or eight, the slots adjacent to the power supply.

The backplane supplies all power and signals to each unit through a DIN style connector. Work Group products can be installed or swapped with with the power on (hot-swap), and snap in with an audible "click" to indicate proper installation. This allows for upgrades, modifications, or replacement of units without interruption to other users on the network.

A BNC connector on the backplane provides connection to and termination of a ThinWire Ethernet segment connected to the building network. Alternately a DECbridge 90 Work Group Bridge (DEWGB) can provide connection to an Ethernet backbone through its AUI or BNC connector.

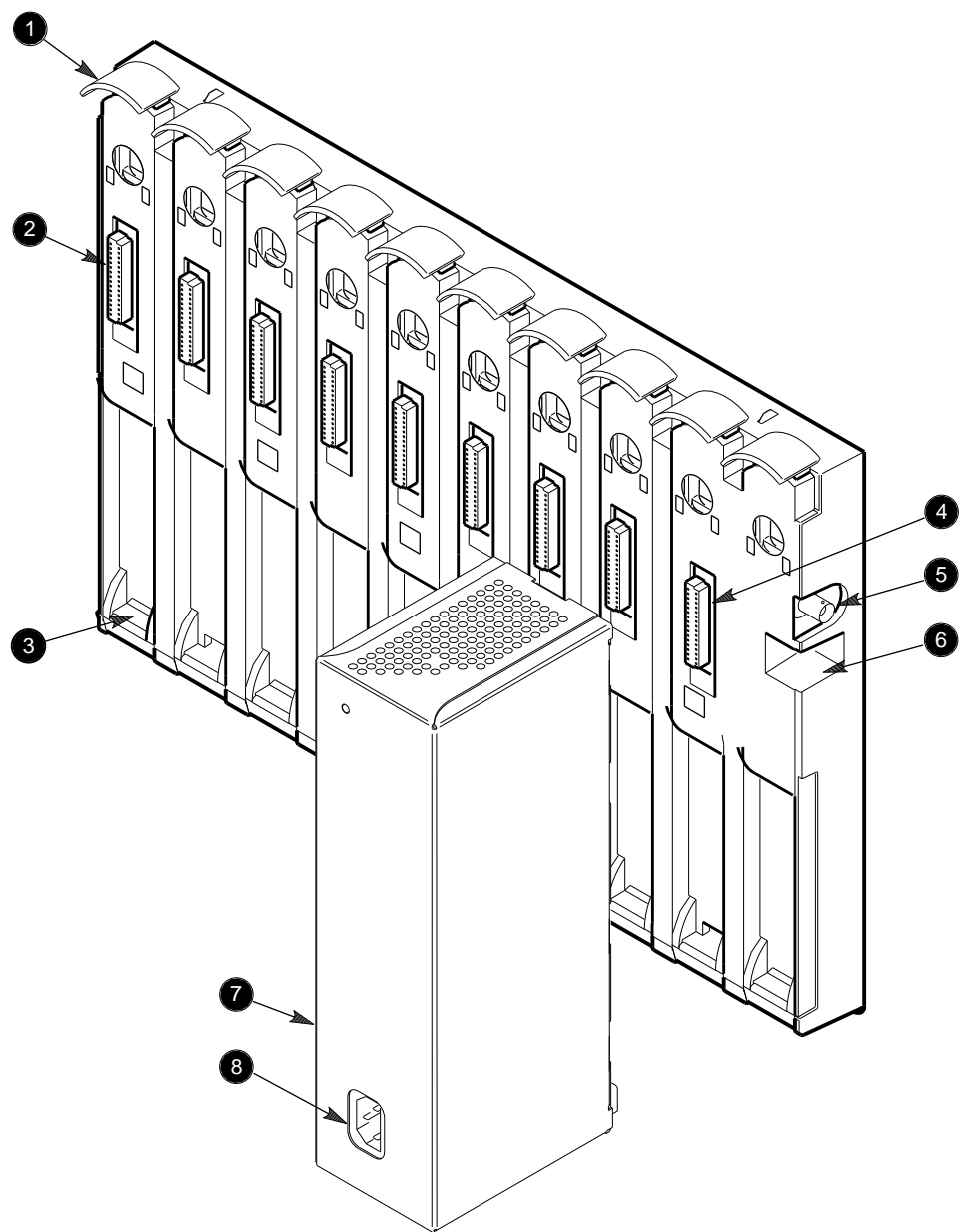
The DEChub 90 backplane can be installed in a standard 19" equipment rack or on a solid wall. The optional DEHUX wall mount plate and cover allows the DEChub 90 backplane to be mounted on solid or hollow walls and office partitions. In addition the DEHUX provides 10½ inches of mounting space for patch panels and a cover.

Figure 1-2 shows the DEChub 90 backplane and calls out its features.

- ① **Release Lever** - Used to release the backplane latching mechanism when removing and installing Work Group units.
- ② **Backplane Connector** - Provides power, network connection, and management signals to Work Group units. Slots one through six supply +5 V to the unit. Slot seven and eight (adjacent to the power supply) supply +5 V and +12 V to the unit.

It is recommended that the DECbridge 90 Work Group Bridge be installed in slot eight.

- ③ **Mounting Slot** - Secures the lower mounting tab of a Work Group unit and the power supply. The slots are numbered from left to right one through eight and the power supply slot (double slot).
- ④ **Power Supply Connector** - Provides +5 V and +12 V power from the power supply to the backplane.
- ⑤ **ThinWire Ethernet BNC Connector** - Connects the backplane to a ThinWire Ethernet segment. The DEChub 90 backplane provides 50 ohm termination of a ThinWire Ethernet. The DEChub 90 backplane must be connected directly to the end of a ThinWire Ethernet segment, no T-connector or terminator.
- ⑥ **Backplane Serial Port MMJ Connector** - Connects the backplane's serial management bus to the serial management bus of another DEChub 90 backplane in the same work group.
- ⑦ **Power Supply** - Provides +5 V and +12 V power to the backplane.
- ⑧ **Power Supply AC Connector** - Provides AC power to the power supply.



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Figure 1-2 The DEChub 90 Backplane



# 2

## Configuration

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### Site Considerations

When planning to use the Work Group Communications Center the following considerations need to be made.

- Location of the Work Group Communication Center (DEChub 90 backplane and DEHUX wall mount and cover).
  - Equipment closet (rack or wall mount)
  - Equipment rack
  - Work Area (wall or partition mount)
- Network requirements
  - Standalone unit
  - Part of a ThinWire Ethernet
  - Connect to a ThickWire backbone
- Building and office cabling and interconnect requirements. Digital's DECconnect family of products can provide these needs. Refer to Appendix B for a list of available documentation.

## Configuration Rules

The configuration rule for the DEChub 90 backplane and Digital's Work Group family of products fall in to two categories. Those that apply to network wiring in general and those that apply to the DEChub 90.

### Basic Configuration Rules

There are a number of rules that relate to segment length, number of repeaters and number and location of bridges. These rules are given in Table 2-1.

**Table 2-1 Basic Configuration Rules**

Subject	Rule
ThinWire Segment	Maximum length of 185 meters Maximum of 30 stations or nodes
ThickWire Segment	Maximum length of 500 meters Maximum of 200 stations or nodes
Repeaters	There can be no more than two (2) repeaters between any stations on a network segment
Bridges	Maximum of seven (7) bridges between any two (2) stations on a local area network (LAN)

### DEChub 90 Configuration Rules

The DEChub 90 backplane has a number of configuration rules and guidelines that must be followed when installing and using the unit. These rules are given in Table 2-2. In addition, normal ThinWire rules apply as they relate to cable lengths, segmentation by repeaters and bridges, and so on.



**Table 2-2 DEChub 90 Configuration Rules**

<b>Subject</b>	<b>Rule</b>
Standalone installation (not connected to an Ethernet segment)	<p>A 50 ohm terminator must be connected to the BNC connector on the right hand side of the backplane unit.</p> <p>A typical standalone installation of the backplane uses the DECbridge 90 Work Group Bridge for its connection to an Ethernet backbone.</p>
DECbridge 90 backplane connected to a ThinWire Ethernet segment	<p>The ThinWire cable must be plugged directly into the Backplane BNC connector, that is, no T-connector and terminator.</p> <p>The backplane must be at one end of the ThinWire segment.</p> <p>For cable length planning the backplane is the equivalent of 65 meters of ThinWire cable. When the backplane is installed at one end of a ThinWire Ethernet segment the segment is limited to a maximum of 120 meters.</p> <p>The backplane with or without Work Group family units installed is the equivalent of 15 nodes on a ThinWire segment.</p> <p>Maximum of two backplanes in a ThinWire segment.</p>
Two backplanes in a ThinWire Ethernet segment	<p>Each backplane must be at an end of the Ethernet segment.</p> <p>The ThinWire cable must be plugged directly into each backplane's BNC connector, that is, no T-connector and terminator.</p> <p>The serial management bus (MMJ connector) for each backplane is to be connected.</p> <p>For cable planning the two backplanes combined are the equivalent of 130 meters of ThinWire cable. The ThinWire segment between the two backplanes is limited to 55 meters.</p> <p>The two backplanes with or without work group units are the equivalent of 30 nodes on a ThinWire segment.</p>
Work Group unit installation	<p>Work Group units may be installed in the Backplane in any mixture with the exception of the DECbridge 90 Work Group Bridge.</p>

**Table 2-2 (Cont.) DEChub 90 Configuration Rules**

Subject	Rule
Installing a DECbridge 90 Work Group Bridge in the backplane	<p>Only one DECbridge 90 Work Group Bridge per backplane.</p> <p>Only one DECbridge 90 Work Group Bridge in a work group.</p> <p>It is recommended that it be installed in Slot eight of the backplane, next to the power supply. The DECbridge 90 can also be installed in slot seven.</p> <p>The DECbridge 90 configuration rules must be followed. The backplane and attached network segments become a “workgroup” network with no other bridges and a maximum of 200 Ethernet addresses allowed.</p>

## Building Wiring

When installing the DEChub 90 Backplane and Digital's Work Group family of products the wiring of the network must be considered and planned. Well-planned network connectivity provides tangible benefits such as:

- Improved management of connections
- Lower cost of moves, additions, and changes
- Increased life span of the cable plant and active components

A structured approach to cabling is an important component of a well-planned network. The wiring system consists of passive components that are divided into three main elements.

- Backbone—the connection between the communication closet and the equipment room within a building and the connection between buildings.
- Horizontal—the connection between, and including, the outlet and the termination in the communication closet.
- Work Area—an area containing a station and the connection between the station and outlet.

The DEChub 90 Backplane provides the centralized distribution point in the *horizontal* element of a structured wiring environment. The DEChub

90 backplane can be installed in the telecommunications closet or the open office environment replacing the telecommunications closet.

The concept of structured wiring is based on the assumption that cable plants are designed to provide service for 15 to 20 years. Devices attached to the cable plant are often expected to be replaced by new technology and remain connected for a much briefer period of time. This means the cable must be reusable, identifiable, and simple to add or change.

The Electronics Industry Association (EIA) and Telecommunications Industry Association (TIA) have been working toward a standard for telecommunications wiring for commercial buildings. After it is approved this standard will be published as EIA/TIA-568. The stated goal of this standard is to provide a uniform wiring system to support multi-product, multi-vendor environments.

EIA/TIA-568 defines telecommunications wiring for a building or multiple buildings in a campus environment. The standard specifies wiring system parameters, including topology, distances, media and connector pin assignments. EIA/TIA recognizes three types of wiring: horizontal, backbone, and work area. This overall structure is shown in Figure 2-1.

## Typical Configurations

This section provides examples of typical Work Group configurations using the DEChub 90 Backplane. These examples show:

- A DEChub 90 Backplane with eight terminal servers
- A Work Group using a Work Group Bridge and seven Ethernet repeaters
- A Work Group using a Work Group Bridge and a combination of Ethernet repeaters and terminal servers
- A Work Group using two backplanes a Work Group Bridge and a combination of Ethernet repeaters and terminal servers

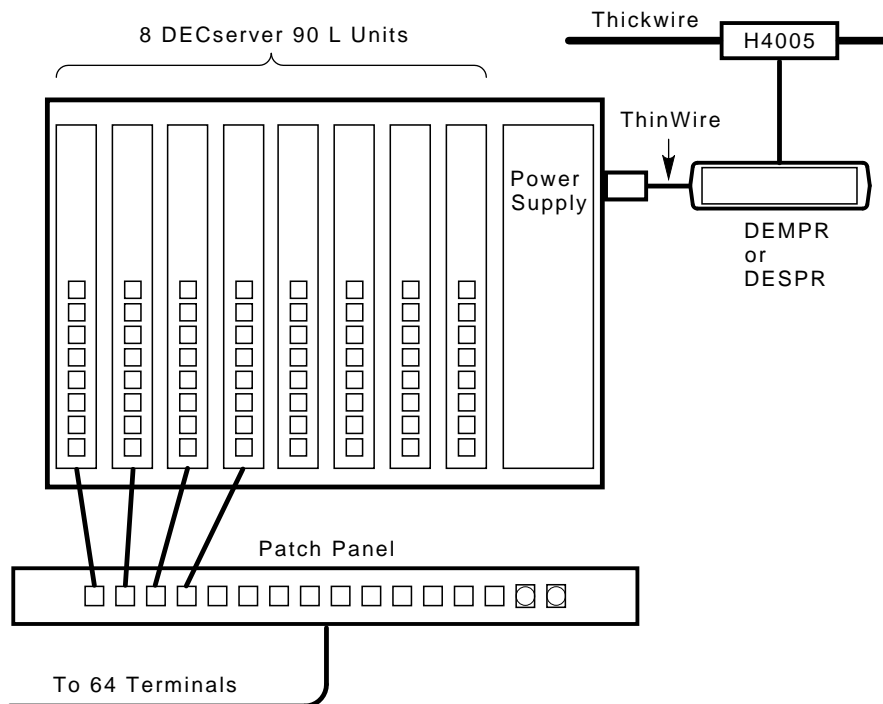
2-6 Configuration

Use LKG-3164-89A here

**Figure 2-1 EIA/TIA-568 Standard Distribution Subsystem Architecture**

## DEChub 90 Backplane with Terminal Servers

The DEChub 90 Backplane provides a clean well organized approach to supporting a group of terminal servers in an Ethernet environment. A single backplane supports up to a maximum of 64 terminals depending on the number of terminal servers installed. Figure 2-2 shows the DEChub 90 being used to connect eight DECserver 90L's to a ThickWire backbone using an Ethernet repeater and H4005 Transceiver.



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**Figure 2-2 Typical Configuration with Eight DECservers in Backplane**

## **Work Group with Ethernet Repeaters**

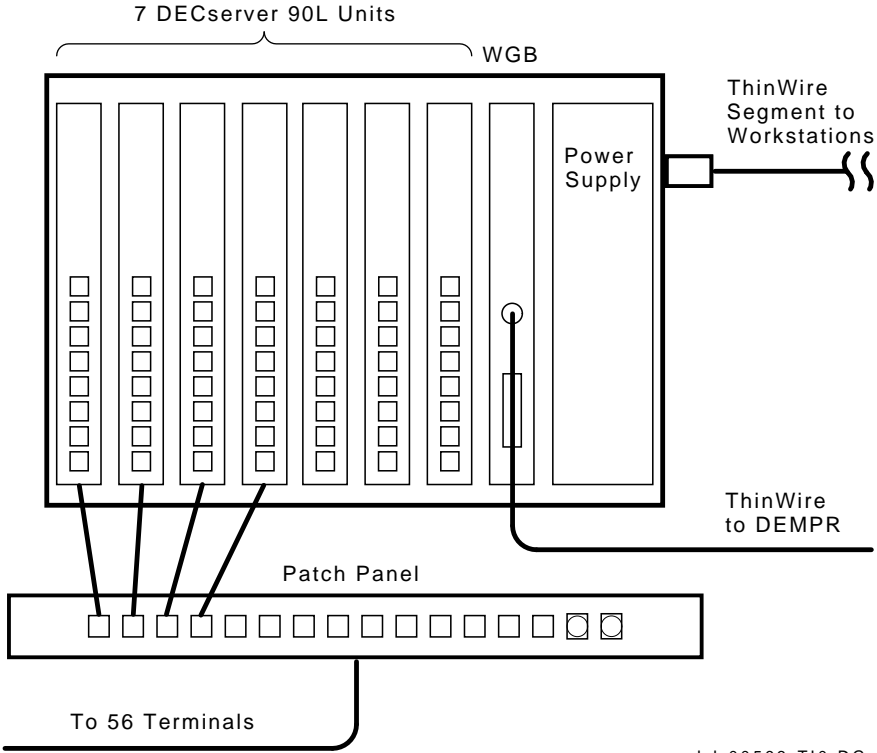
The DEChub 90 Backplane can support a variety of work group configurations that include workstations, personal computers (PCs), and terminals. The following configuration examples show how the DEChub 90 backplane and Digital's family of Work Group products can be used to support a wide variety of work group configurations.

Figure 2-3 shows a configuration that supports a work group with a lot of terminals and a few workstations.

Figure 2-4 shows a configuration that supports a workgroup of workstations and PCs using multiple Ethernet repeaters. These repeaters can support ThinWire Ethernet, Twisted-Pair Ethernet or a combination of both.

Figure 2-5 shows a configuration that supports a combination of workstations, PCs, and terminals.

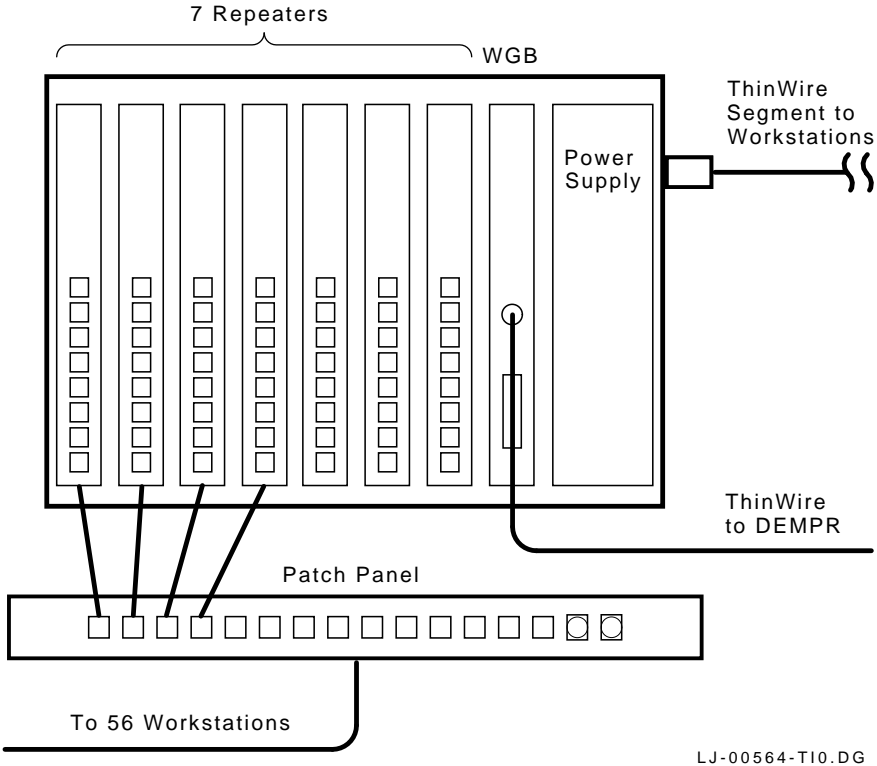
Figure 2-6 shows a configuration with two DEChub 90 backplanes used to support a large work group.



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**Figure 2-3 Work Group Configuration with DECservers and Work Group Bridge**

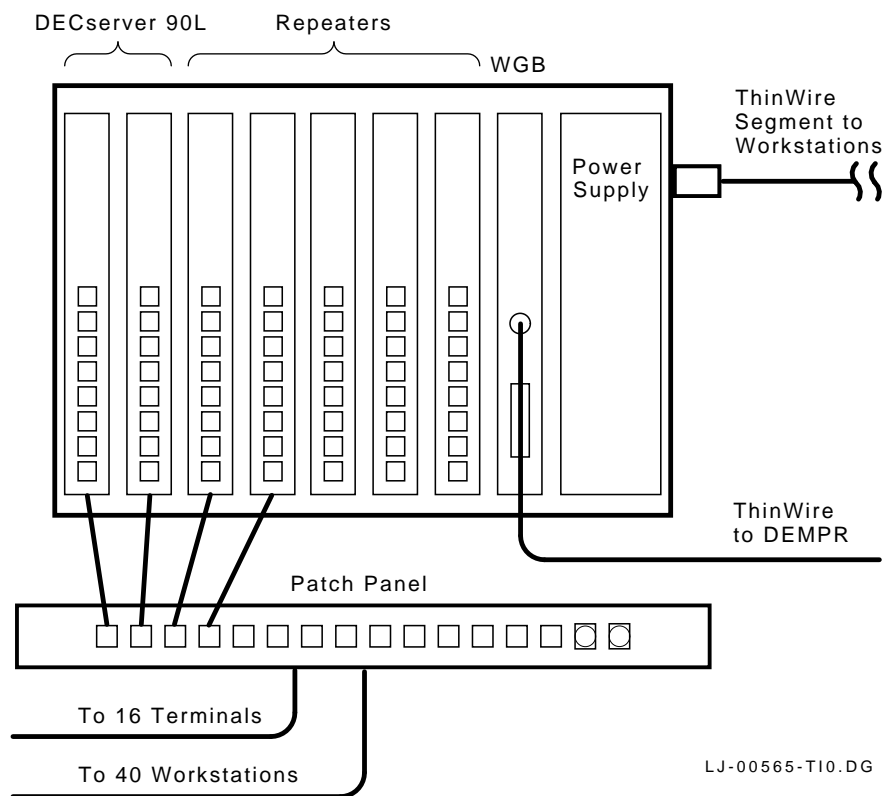
2-10 Configuration



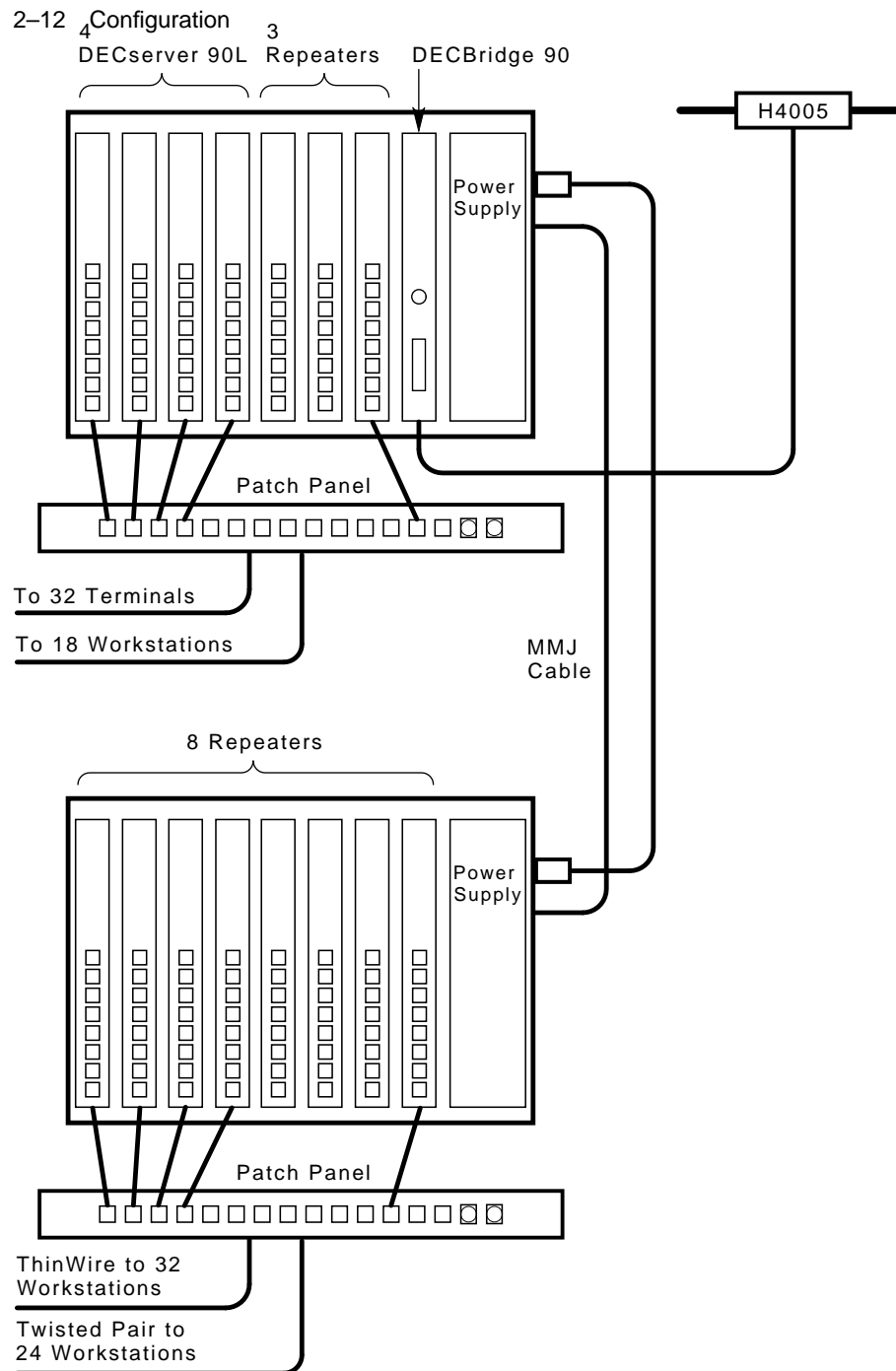
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**Figure 2-4 Work Group Configuration Supporting Workstations and PCs**





**Figure 2-5 Work Group Configuration Supporting Workstations, PCs, Terminal Servers**



**Figure 2-6 Work Group Configuration with Two Backplanes**

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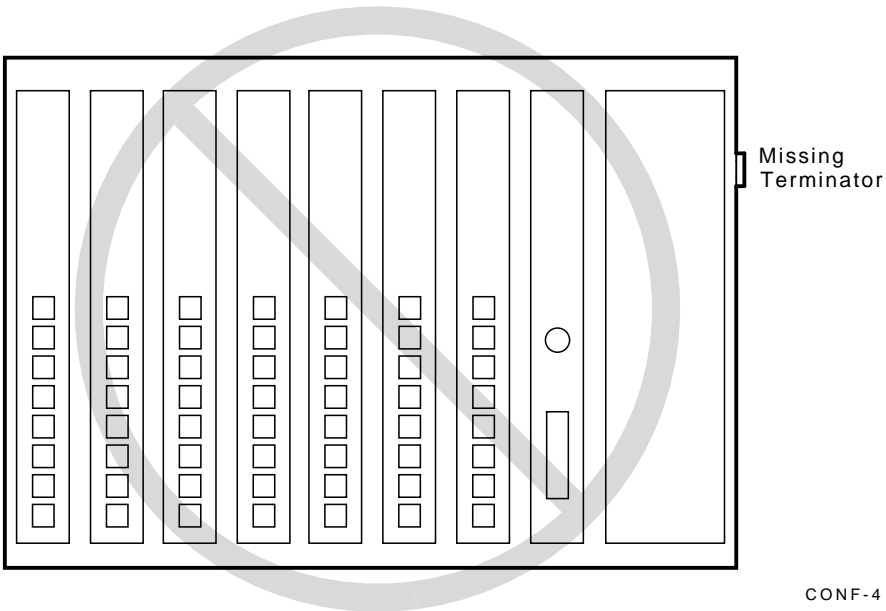
## Configuration Errors

This section provides examples of various configuration errors that may occur when installing a work group using the DEChub 90 Backplane.

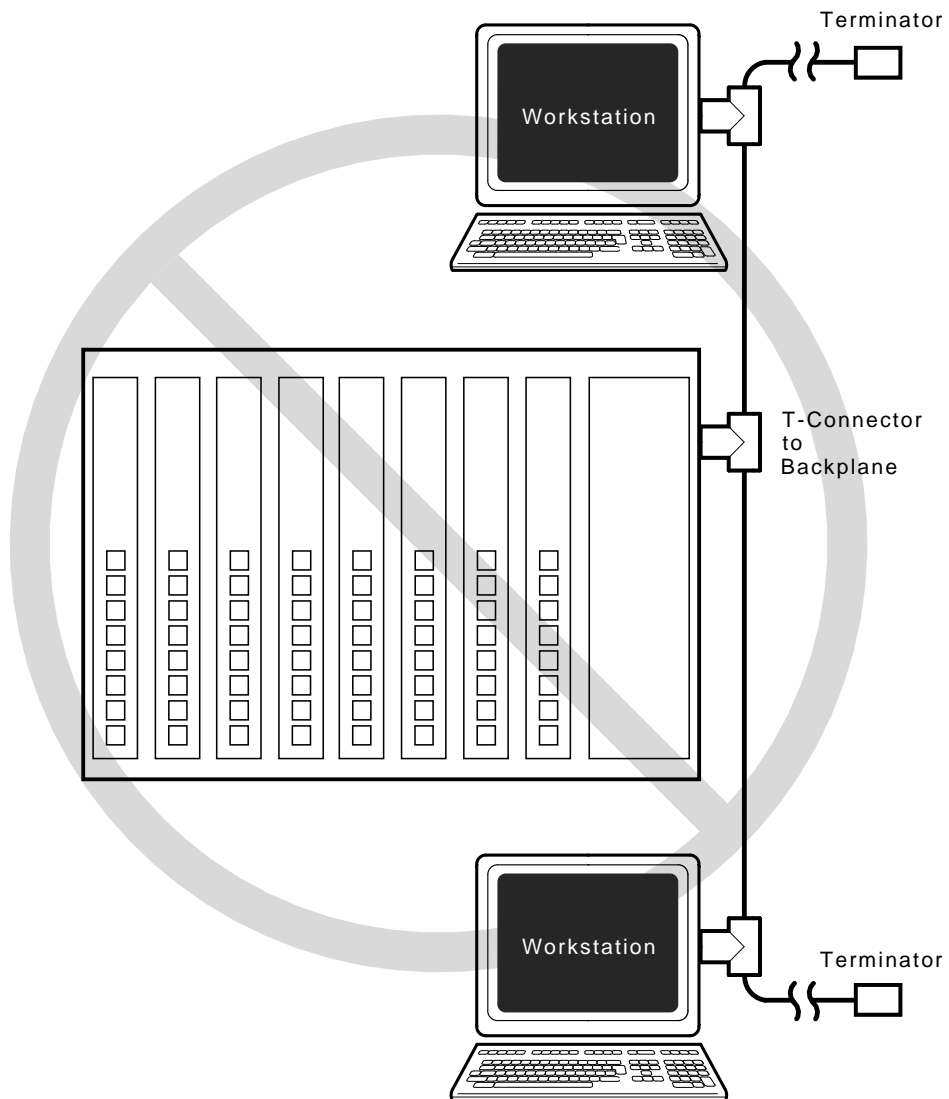
### Termination Configuration Errors

The DEChub 90 backplane must be properly terminated in order for the ThinWire segment to function properly. The DEChub 90 is the equivalent of 65 meters of ThinWire cable terminated at one end with 50 ohms. Figure 2-7 shows a backplane installed with its terminator or properly terminated ThinWire segment missing.

Because the DEChub 90 terminates one end of a ThinWire Ethernet segment it cannot be installed in the middle of a segment. Figure 2-8 is an example of the DEChub 90 installed in the middle of a ThinWire Ethernet segment.



**Figure 2-7 Backplane Improperly Terminated**

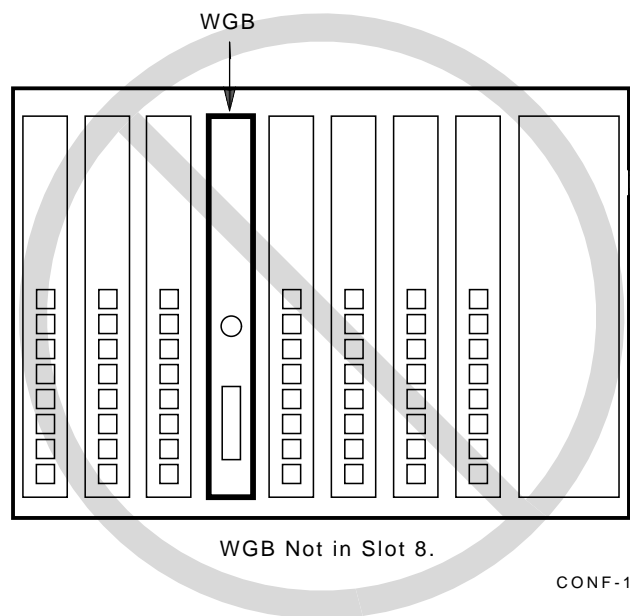


**Figure 2-8 Work Group with Backplane Installed in Middle of ThinWire Segment**

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### Work Group Bridge Configuration Errors

The DECbridge 90 must be installed in either slot 8 or slot 7 of the DEChub 90 backplane. If it is not installed in one of these slots it will not function because of missing supply voltages. The recommended slot for the DECbridge 90 is slot 8. Figure 2-9 shows the DECbridge 90 installed in the wrong slot.

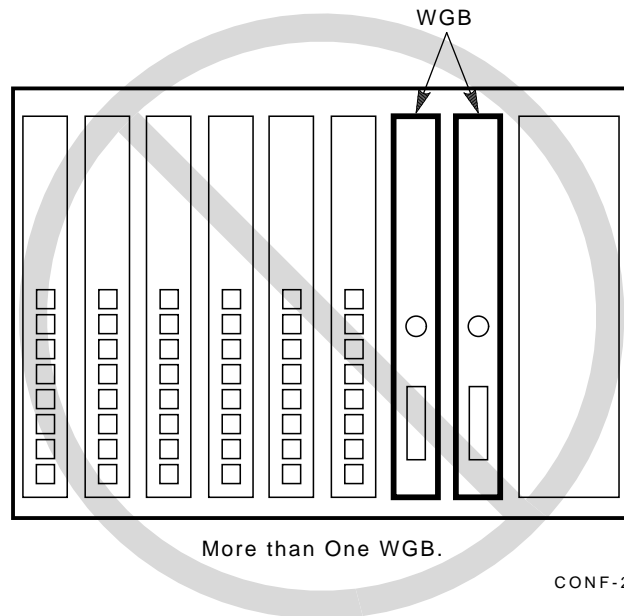


**Figure 2-9 Work Group Bridge Installed in Wrong Slot**

When configuring a work group only one DECbridge 90 Work Group Bridge can be used. The reasons for this restriction are as follow:

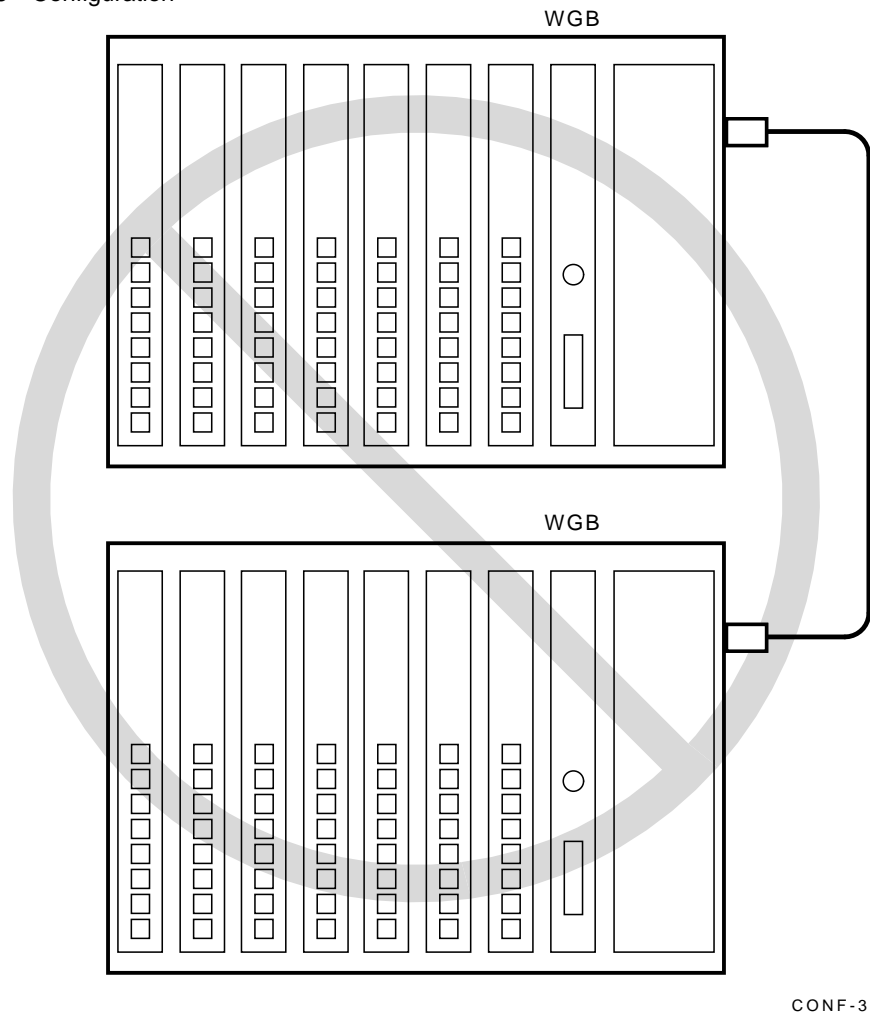
1. The DEChub 90 backplane +12V power supply can only support one Ethernet backbone transceiver circuit.
2. When two bridges are a part of a work group; a network failure can make one of the bridges look like it is a part of the other bridge's work group. This can cause the address table of the other bridge to be overloaded.

Figure 2-10 shows a single backplane with more than one Work Group Bridge installed. Figure 2-11 shows a work group with more than two bridges installed.



**Figure 2-10 Two Work Group Bridges Installed in a Single Backplane**

## 2-18 Configuration

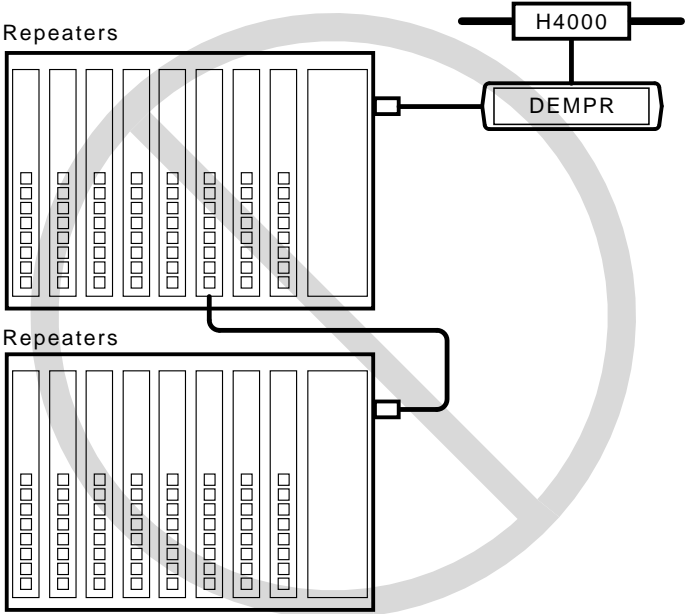


**Figure 2-11 Two Work Group Bridges Installed in Work Group**

### **Repeater Configuration Errors**

When installing repeaters in an Ethernet environment there must be no more than two repeaters between any node on a segment. Figure 2-12 shows a violation of the two repeater rule.





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Figure 2-12 More Than Two Repeaters



# 3

## Work Group Communication Center Installation and Troubleshooting

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The DEChub 90 backplane can be installed in a 19" equipment rack or on a wall or office partition using the DEHUX wall mount plate. The wall mount plate holds the backplane, standard 19" rack mount patch panels and an optional cover. This section covers the following:

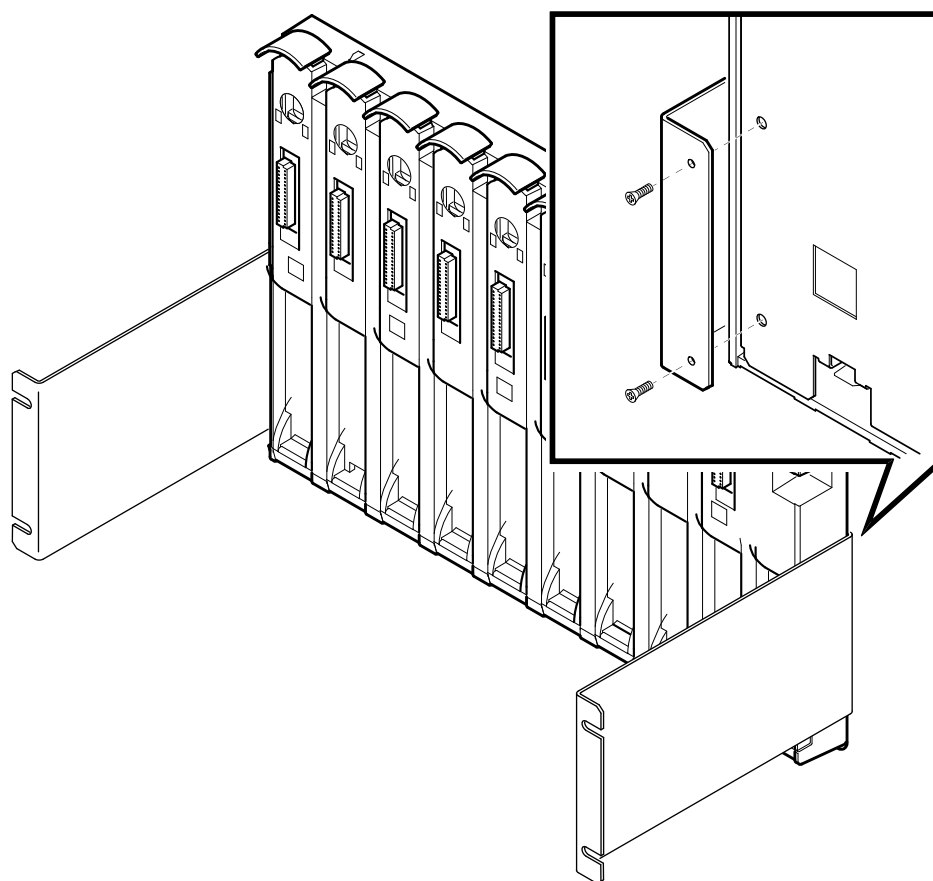
- Installing the DEChub 90 backplane
  - In a 19" equipment rack
  - On a solid wall
- Installing the DEChub 90 backplane using the DEHUX wall mount plate
  - On a wall
  - On an office partition
- Installing distribution panels in the DEHUX wall mount plate
- Installing the DEHUX cover
- Troubleshooting the DEChub 90 backplane

## Rack Mount Installation

The DEChub 90 backplane comes with rack mount brackets and mounting hardware to allow the unit to be installed in a standard RETMA 19" equipment rack.

1. Locate the rack mount brackets and four (4) #6 screws that came with your backplane.
2. Attach the rack mount brackets, using the #6 screws, to the backplane as shown in Figure 3-1.
3. Install the backplane in the equipment rack using the four 10-32 screws and U-nuts (if necessary) supplied with the backplane.
4. Install the backplane power supply as shown in Figure 3-2.
  - a. Catch the mounting tabs on the bottom of the power supply in the mounting slots of the backplane.
  - b. Raise the two release levers for the power supply slot.
  - c. Rock the power supply into place. Verify the alignment of the power supply connector and backplane connector as the power supply is rocked into place.
  - d. Lower the two release levers to lock the power supply in place.
5. Attach the power cord to the power supply and to a working AC outlet. Verify that the green LED on the power supply lights.

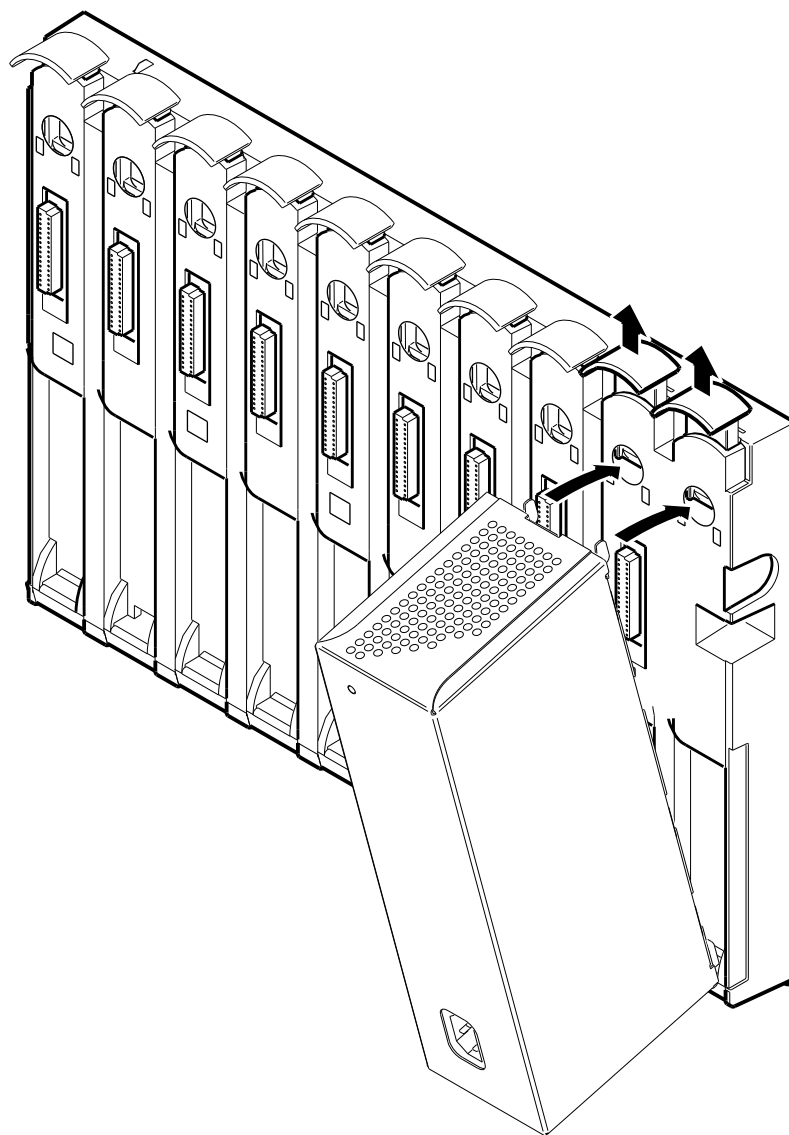
You are ready to make the necessary network connections and install Work Group units in the backplane. Refer to Chapter 2 for configuration rules and guidelines for the backplane. When installing Work Group units in the backplane refer to their related documentation for installation and verification procedures and additional configuration requirements.



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**Figure 3-1 Installing Rack Mount Brackets to Backplane**

### 3-4 Work Group Communication Center Installation and Troubleshooting



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**Figure 3-2 Installing the Backplane Power Supply**

## Solid Wall Installation

The DEChub 90 backplane can be mounted directly to a solid wall (wood that is a minimum of 3/8" thick) using the two slotted mounting holes on the back of the unit.

### NOTE

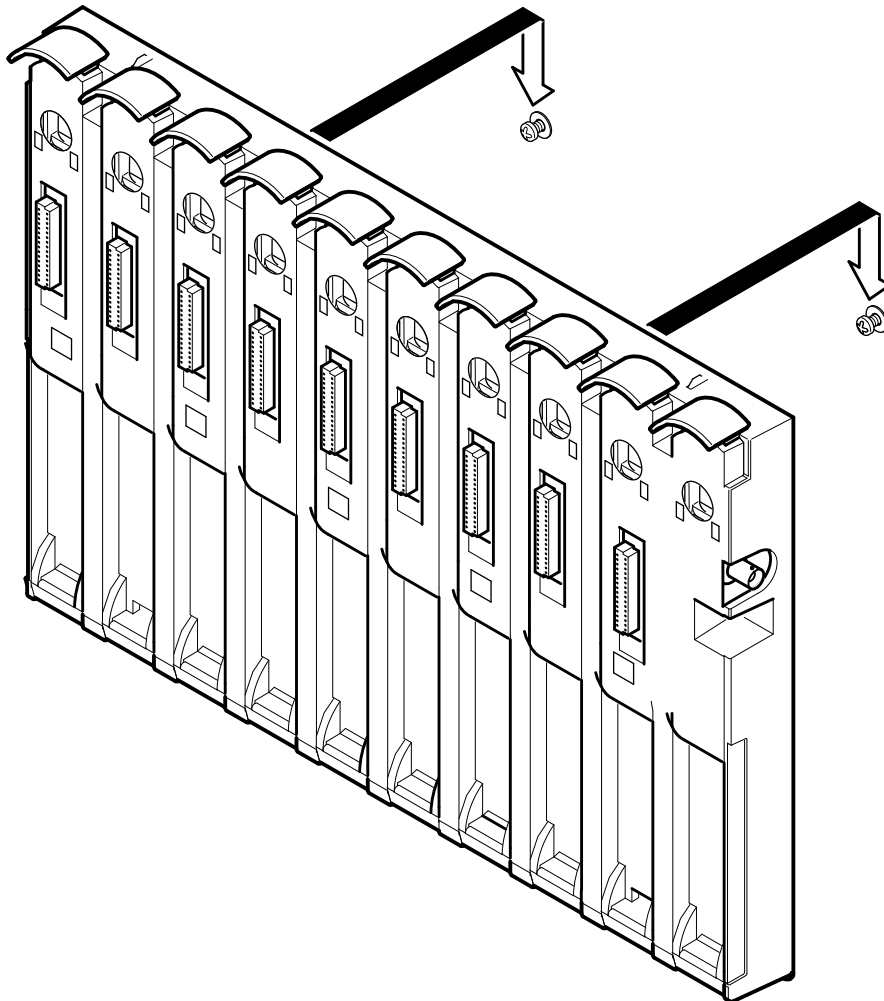
**The total weight of the DEChub 90 backplane and eight modules is approximately 23 pounds. This plus the weight and stress provided by cables must be considered when choosing a location for the DEChub 90 backplane.**

1. Mark the location for the two #10 mounting screws.
  - a. The screws should be 16 inches on center.
  - b. To place the LED indicators of the Work Group units at eye level it is recommended that the mounting screws be approximately 58 inches from the floor.
2. Using a 7/64 inch bit drill pilot holes at the locations marked on the wall.
3. Screw the wood screws into the pilot hole until each screw head is 1/8 inch from the surface of the wall.
4. Set the slotted holes on the back of the backplane over the heads of the screws and slide down until the screws contact the top of the slots, Figure 3-3.
5. Install the backplane power supply as shown in Figure 3-2.
  - a. Catch the mounting tabs on the bottom of the power supply in the mounting slots of the backplane.
  - b. With one hand raise the two release levers for the power supply slot.
  - c. With your other hand rock the power supply into place. Verify the alignment of the power supply connector and backplane connector as the power supply is rocked into place.
  - d. Lower the two release levers to lock the power supply in place.
6. Attach the power cord to the power supply and to a working AC outlet. Verify that the green LED on the power supply lights.

### 3-6 Work Group Communication Center Installation and Troubleshooting

You are ready to make the necessary network connections and install Work Group units in the backplane. Refer to Chapter 2 for configuration rules and guidelines for the backplane. When installing Work Group units in the backplane refer to their related documentation for installation and verification procedures and additional configuration requirements.





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**Figure 3-3 Mounting DEChub 90 Backplane on a Solid Wall**

## Installation Using DEHUX Wall Mount Plate

The DEChub 90 backplane can be mounted on a wall or office partition using the the DEHUX wall mount plate and cover. In addition the DEHUX wall mount plate accommodates a variety of industry standard patch panel sizes for up to 64 connections.

The wall mount plate comes with the hardware required to mount the unit on a solid wall, hollow wall, or office partition.

### NOTE

**The total weight of the DEChub 90 backplane, DEHUX wall mount and cover, and eight modules is approximately 45 pounds. This plus the weight of options and cables must be considered when choosing a location for the wall mount plate and backplane.**

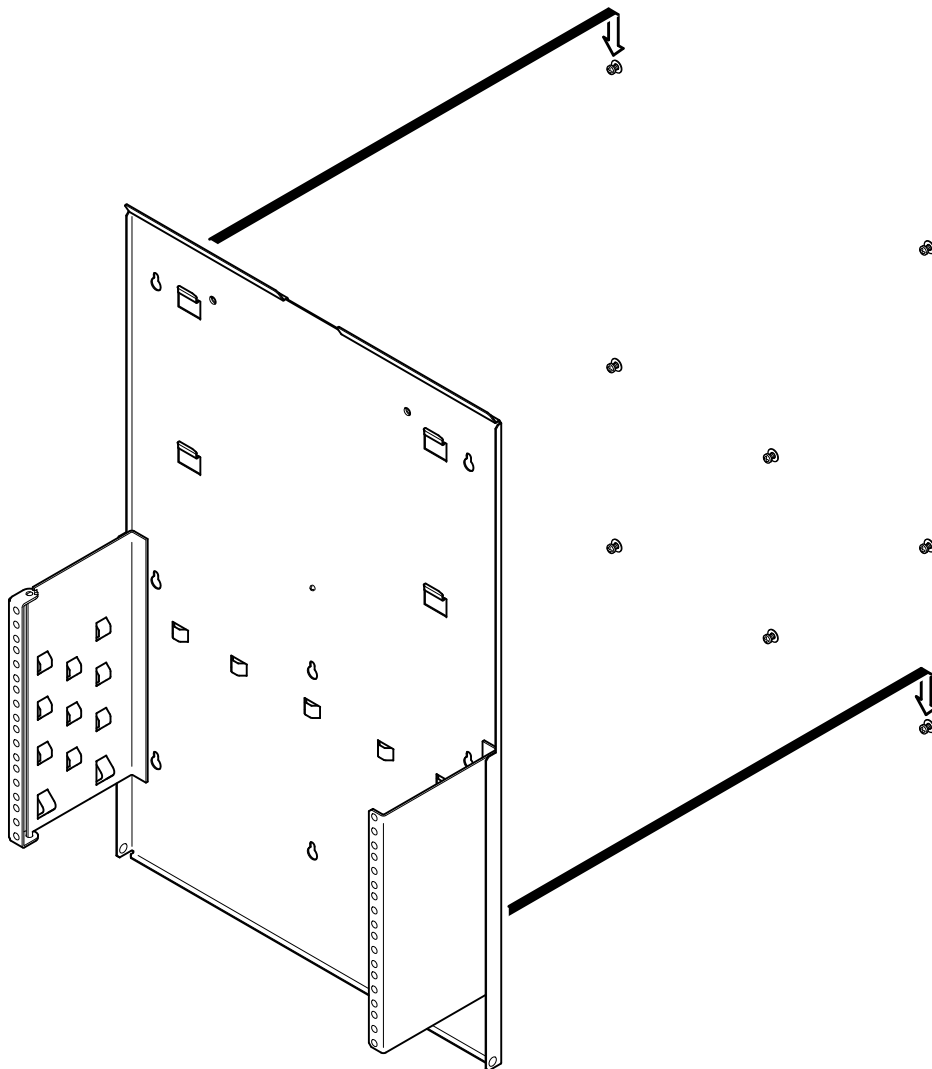
## Wall Mount Installation

1. Locate the wall mount plate (Figure 3–4), and have someone hold it in place against the wall. To place the LED indicators of the Work Group units at eye level it is recommended that the top of the wall plate be approximately 63 inches from the floor.

### NOTE

**Note that there are eight slotted mounting holes in the wall mounting plate, use the four nearest the corners for stability. The others are to be used if the unit cannot be securely fastened to the mounting surface using the four corner holes.**

2. Mark the four slotted mounting hole locations on the wall and set the wall mounting plate aside.



**Figure 3-4 Wall Mount Plate**

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3-10 Work Group Communication Center Installation and Troubleshooting

3. Select the appropriate fastener for the mounting surface.

The supplied wood screws can be used when the mounting surface is wood that is a minimum of 3/8" thick.

The supplied hollow wall fasteners can be used when the mounting surface is a hollow wall that is a maximum of 5/8" thick.

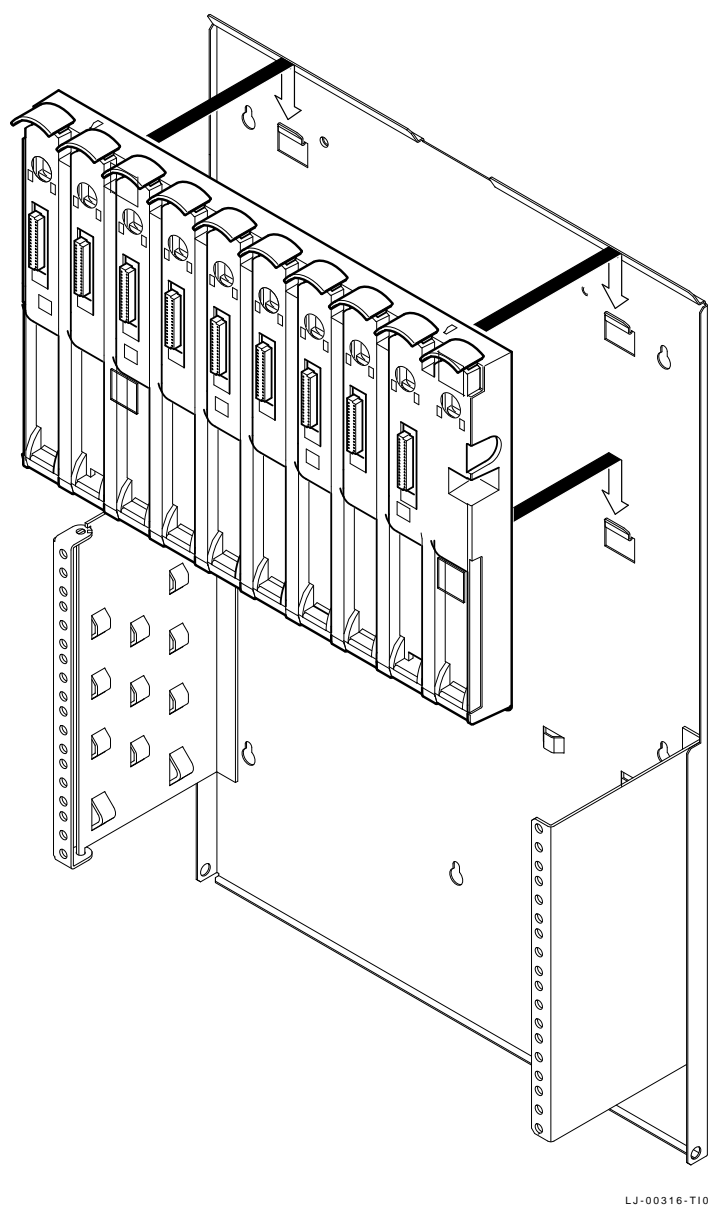
4. Using the selected fastener prepare to hang the wall mounting plate.

*Wood Screws:*

- a. Using a 7/64 inch bit drill pilot holes at the locations marked on the wall.
- b. Screw the wood screws into the pilot hole until the screw head is 1/4 inch from the surface of the wall.

*Hollow Wall Fasteners:*

- a. Using a 7/16 inch bit drill pilot holes at the locations marked on the wall.
  - b. Insert the hollow wall fasteners in the pilot holes and set in place by tightening the screws.
  - c. Unscrew each mounting screw until the screw head is 1/4 inch from the wall.
5. Set the slotted holes of the wall mount plate over the heads of the screws, and slide down until the screws contact the top of the slots.
  6. Tighten the mounting screws.
  7. Place the backplane over the four hooks on the wall mount plate, and press down until the backplane locks into place as shown in Figure 3-5.



**Figure 3-5 Installing the Backplane on the Wall Mount Plate**

8. Install the backplane power supply as shown in Figure 3-2.
  - a. Catch the mounting tabs on the bottom of the power supply in the mounting slots of the backplane.
  - b. Raise the two release levers for the power supply slot.
  - c. Rock the power supply into place. Verify the alignment of the power supply connector and backplane connector as the power supply is rocked into place.
  - d. Lower the two release levers to lock the power supply in place.
9. Attach the power cord to the power supply and to a working AC outlet. Verify that the green LED on the power supply lights.

You are ready to make the necessary network connections and install Work Group units in the backplane. Refer to Chapter 2 for configuration rules and guidelines for the backplane. When installing Work Group units in the backplane refer to their related documentation for installation and verification procedures and additional configuration requirements.

## Office Partition Mounting

1. Locate the office partition brackets and four (4) #6 screws that came with the wall mount plate.
2. Attach the office partition brackets, using the #6 screws, to the wall mount plate.
3. Hang the wall mount plate on the office partition.
4. Attach the backplane to the wall mount plate as shown in Figure 3-5.
5. Install the backplane power supply as shown in Figure 3-2.
  - a. Catch the mounting tabs on the bottom of the power supply in the mounting slots of the backplane.
  - b. Raise the two release levers for the power supply slot.
  - c. Rock the power supply into place. Verify the alignment of the power supply connector and backplane connector as the power supply is rocked into place.
  - d. Lower the two release levers to lock the power supply in place.
6. Attach the power cord to the power supply and to a working AC outlet. Verify that the green LED on the power supply lights.

You are ready to make the necessary network connections and install Work Group units in the backplane. Refer to Chapter 2 for configuration rules and guidelines for the backplane. When installing Work Group units in the backplane refer to their related documentation for installation and verification procedures and additional configuration requirements.

## Patch Panel

The patch panel may be Digital Equipment Corporation supplied or customer supplied. The DEHUX mounts will accept a variety of standard 19 inch panels with a maximum height of 10½ inches. This provides space for two standard 5¼ inch or 3½ inch high patch panels. Each panel is secured to the mounting brackets using four screws. The left hand mounting bracket pivots to allow access to the back of the installed patch panels without fully removing the patch panel(s). Cables are dressed down the left side using cable-ties and the loops stamped in the hinged mounting bracket.

## Installing the Cover

The DEHUX cover is an attractive office environment compatible enclosure providing protection and security for the backplane and installed components. After you are finished installing and cabling the Work Group units you can install the cover as shown in Figure 3-6. For security the cover has two holes in its lower left and right corners that align with two holes in the wall mount plate. You can use a lock or some other device to lock the cover in place.

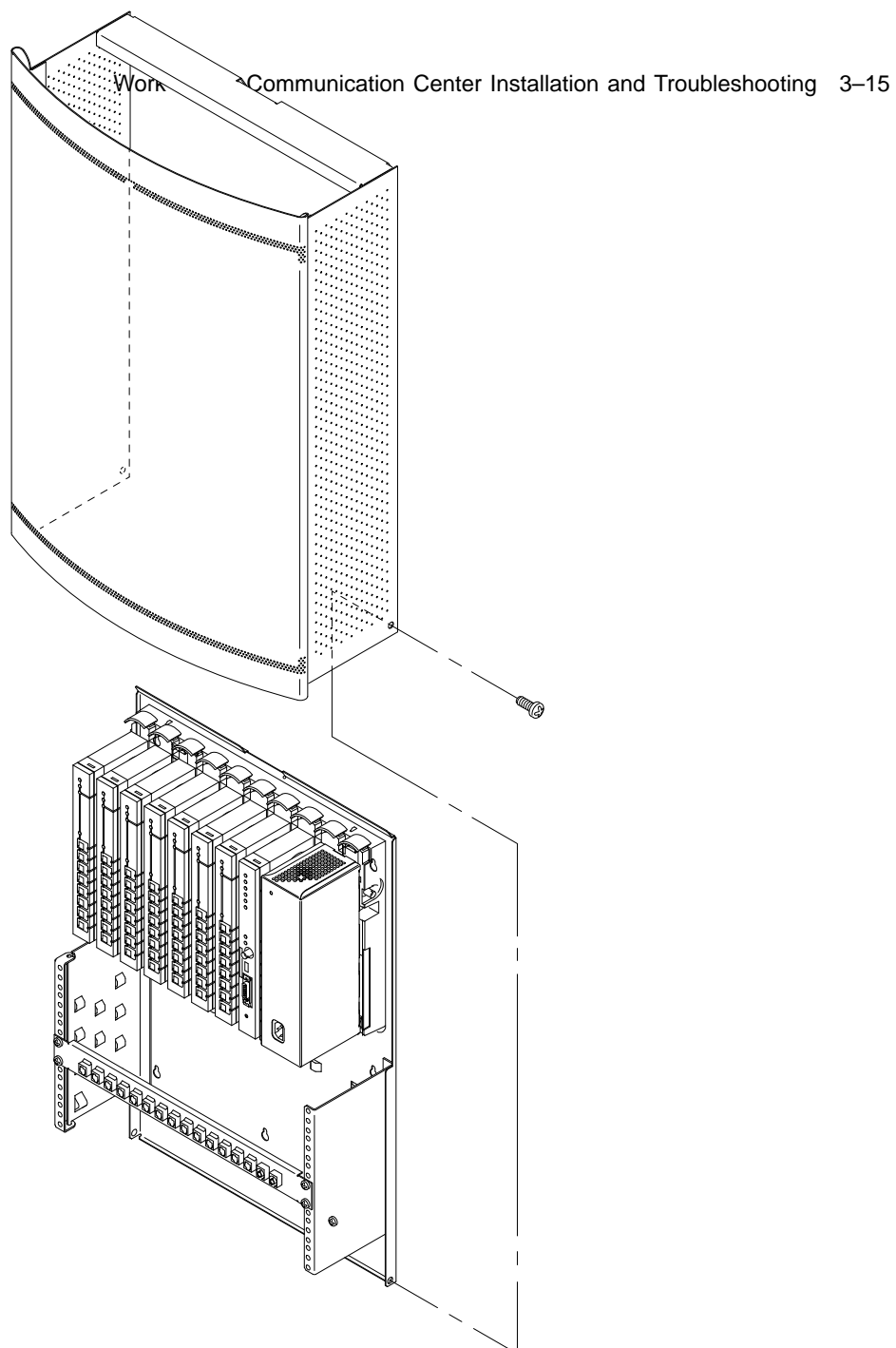
To install the DEHUX cover:

1. Place the cover over the wall mount plate, backplane, and distribution panels.
2. Slide the cover down until the top back edge of the cover catches on the top lip of the wall mount plate.

The cover can be locked to the wall plate using holes located at the lower left and lower right of the cover.

3. Mark the location label and slide it in to the slots on the top of the cover.





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**Figure 3-6 Installing the Cover**

## Installing Work Group Units in the Backplane

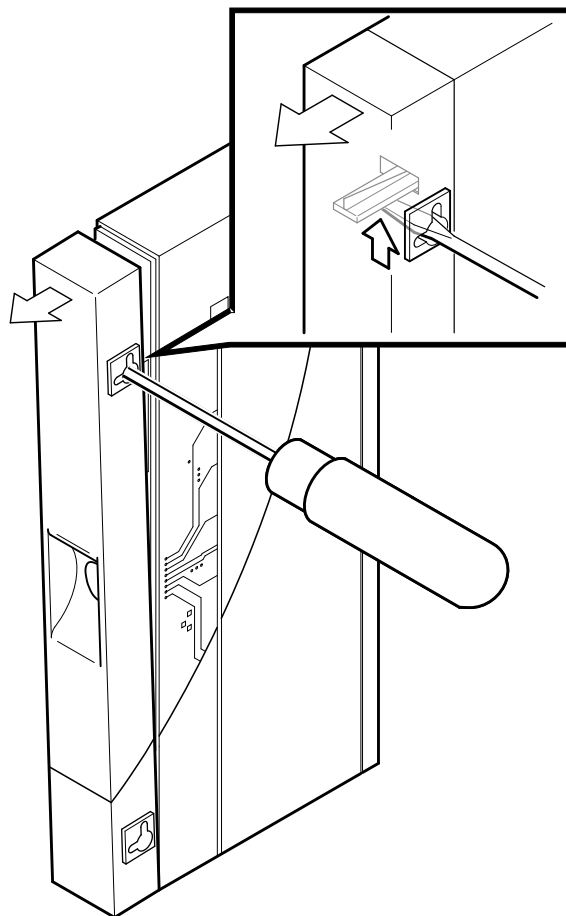
When installing Work Group units in the backplane refer to their related documentation for complete installation and verification procedures.

The following steps provide the basic procedure for physically installing Work Group units in the backplane.

1. If the Work Group unit to be installed in the backplane has a cover on the back of the unit, remove the cover (Figure 3-7).

To remove the back cover on a Work Group unit:

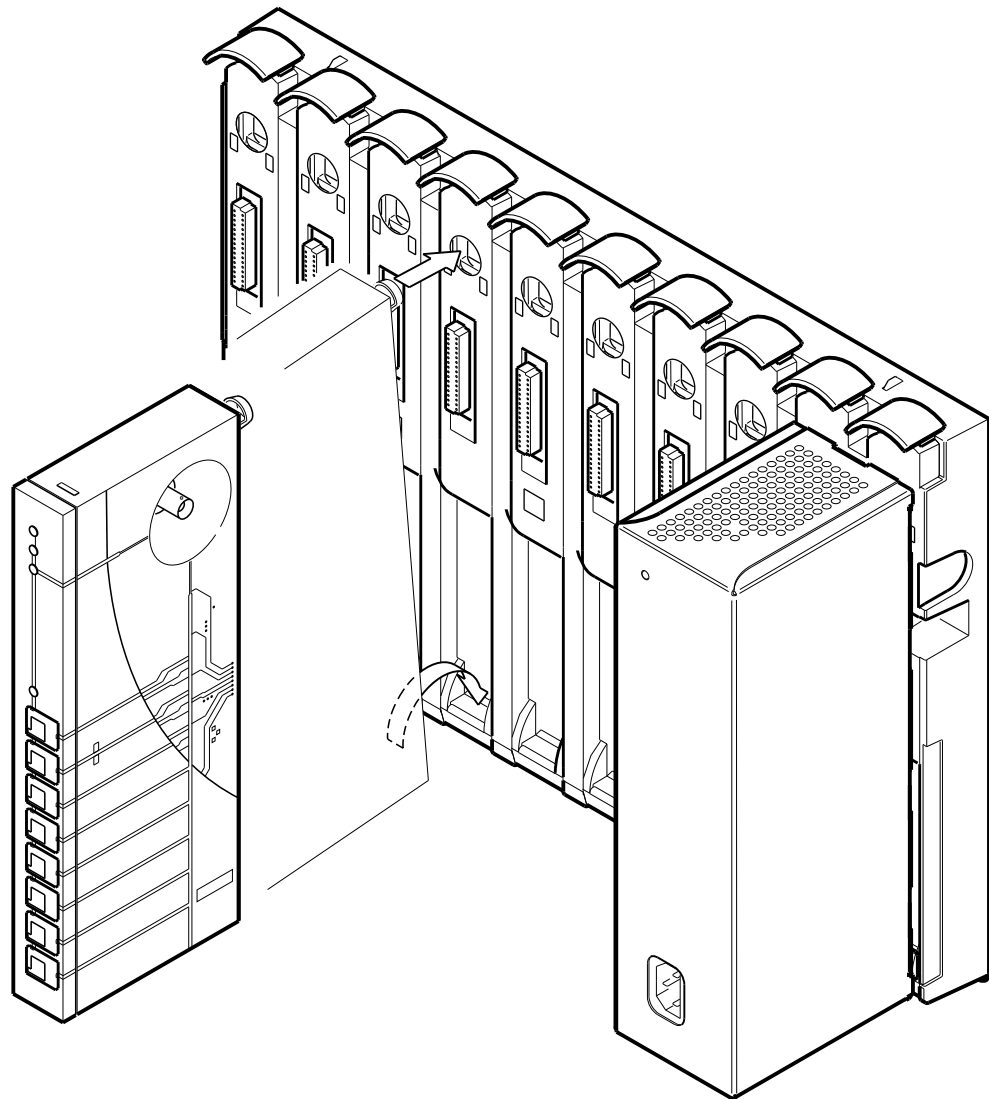
- a. Insert a small screwdriver into the top mounting hole in the cover.
  - b. Lift up on the latch.
  - c. While lifting up on the latch, pull the top of the cover away from the unit and down.
2. Place the lower mounting tab, located on the back of the unit, in the appropriate mounting slot on the backplane (Figure 3-8).
  3. Rock the unit into place. An audible “click” is heard when the unit is securely latched in place.



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**Figure 3-7 Removing the Back Cover of a Work Group Unit**

3-18 Work Group Communication Center Installation and Troubleshooting



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**Figure 3-8** Installing a Work Group Unit in the DEChub 90 Backplane

## Troubleshooting

This section provides information on troubleshooting the DEChub 90 Backplane and power supply. Before you begin you should:

1. Verify the installation of the unit.
  - Does the installation of the unit meet the configuration rules given in Chapter 2.
  - Are the Work Group units working properly. Refer to the related documentation for each unit.
2. Note the fault condition.
3. Isolate the problem. Use Table 3-1 as a guide to determine the probable cause and the suggested solution.

**Table 3-1 DEChub 90 Backplane Troubleshooting**

<b>If...</b>	<b>Then...</b>	<b>Do this...</b>
The LED on power supply is "blinking"	Short or overload caused by a Work Group unit	<p>Remove all units from backplane.</p> <p>Verify each unit by installing units one at a time. Replace the unit causing the problem.</p> <p>Problem occurs with every unit tested in backplane, a possible bad power supply or backplane. Replace the power supply. If the problem still exists replace the backplane.</p>
The LED on the power supply is not "on"	Power supply not receiving AC power	<p>Check that the AC power cord is connected to an AC outlet and that it is properly seated in the power supply connector.</p> <p>Verify that the AC outlet is working. If the problem still exists replace the power supply.</p>
DECbridge 90 Work Group Bridge does not work	Unit is not receiving +12 V	Unit is not installed in slot seven or eight of the backplane. Install the unit in slot seven or eight. Slot eight is recommended.
	Two DECbridge 90's installed in slot seven and eight	Remove one of the units.

# A

## Specifications and Parts List

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### Specifications

#### Mechanical

#### Component Weights

DEChub 90 backplane	2.27 kg (5 lb)
DEChub 90 power supply	1.82 kg (4 lb)
DEHUX wall mount panel	5.45 kg (12 lb)
DEHUX cover	4.55 kg (10 lb)
Work Group Unit	.68 kg (1.5 lb) typical

#### Wall Mount Option (DEHUX)

Mounting Area:	Height	73.66 cm (29 in)
	Width	54.61 cm (21½ in)
Required Clearances:	Top and Bottom	30.48 cm (12 in)
	Sides	2.54 cm (1 in)
	Front (outward from wall)	62.23 cm (24½ in)

## A-2 Specifications and Parts List

### **Rack Mount Option (DEChub 90)**

Mounting Area:	Height	30.48 cm (12 in)
	Width	44.45 cm (17½ in)
	Depth (excluding cables)	16.51 cm (6½ in)
Required Clearances:	Top and Bottom	30.48 cm (12 in)
	Sides (beyond Rack)	2.54 cm (1 in)
	Rear (behind rack)	15.24 cm (6 in)
	Front (in front of rack)	30.48 cm (12 in)

### **Electrical**

Input Voltage:	120 Vac nominal, single phase or 240 Vac nominal, single phase. Power supply will auto select correct voltage range.
Line Frequency:	47 to 63 Hz
Input Current:	3.8 amps at 120 Vac 1.9 amps at 240 Vac
Power:	90 watts maximum

### **Environmental**

Cooling: Convection and fan.

Operating Temperature: +5°C to +50°C

Operating Humidity: 10% to 95%, noncondensing



## Parts Lists

### DEChub 90 Backplane

Quantity	Description
1	DEChub 90 Backplane, 8 slots
1	Power Supply
1	AC power cord
1	BC-16M-06 ThinWire office cable
2	Rack mount brackets
4	8-32 x 1/2" machine screws
4	10-32 x 1/2" machine screws
4	10-32 U-nuts
2	10 x 1" wood screws

### DEHUX Wall Mount and Cover

Quantity	Description
1	DEHUX wall mount plate
1	DEHUX cover
1	Location Label
2	Partition hangers
2	8-32 x 5/16" machine screws
6	10 x 1" wood screws
6	3/16 x 2" hollow wall fasteners
8	10-32 x 1/2" machine screws
8	10-32 U-nuts



# B

## Related Documentation

Document Title	Order Number
Network Wiring and Applications Guide	EB-K2411-42
OPEN DECconnect System Guide	EC-H0631-42
DECconnect System Requirements Workbook	EK-DECSY-EG
DECconnect System Fiber Optic Installation Guide	EK-DECSY-FI
DECconnect System Fiber Optic Planning and Configuration Guide	EK-DECSY-FP
OPEN DECconnect Components and Applications Catalog	EB-K2407-42

### Ordering Information

Customers may order documents by phone or mail.

#### Continental USA and Puerto Rico

Call 800-258-1710 or mail to:

Digital Equipment Corporation  
Peripherals and Supplies Group  
P.O. Box CS2008  
Nashua, NH 03061

#### New Hampshire, Alaska, and Hawaii

Call 1-603-884-6660.

#### Outside the USA and Puerto Rico

Mail to:

Digital Equipment Corporation  
Attn: Accessories and Supplies Business Manager  
c/o Local Subsidiary or Digital-Approved Distributor

B-2 Related Documentation

**Digital Personnel**

Digital personnel may order these documents from:  
Digital Equipment Corporation  
444 Whitney Street  
Northboro, MA 01532  
Attn: Publishing and Circulation Services (NRO3/W3)  
Order Processing Section

